DSP-2448 MKII

ORDERCODE D2031

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The DAP Audio DSP-2448 MKII brings excitement to any venue. Whether you want simple plug-&-play action or a sophisticated show, this product provides the effect you need.

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Thank you!

DAP Audio DSP-2448 MKII Product Guide

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WARNING

CAUTION!

Keep this system away from rain and moisture!

FOR YOUR OWN SAFETY, PLEASE READ THIS USER MANUAL CAREFULLY BEFORE YOUR INITIAL START-UP!

SAFETY INSTRUCTIONS

Every person involved with the installation, operation and maintenance of this system has to:

- be qualified
- follow the instructions of this manual

CAUTION! Be careful with your operations.
With a dangerous voltage you can suffer
a dangerous electric shock when touching the wires!

Before you initial start-up, please make sure that there is no damage caused by transportation. Should there be any, consult your dealer and do not use the system.

To maintain perfect condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this manual.

Please consider that damages caused by manual modifications to the system are not subject to warranty.

This system contains no user-serviceable parts. Refer servicing to qualified technicians only.

IMPORTANT:

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual or any unauthorized modification to the system.

- Never let the power-cord come into contact with other cables! Handle the power-cord and all connections with the mains with particular caution!
- Never remove warning or informative labels from the unit.
- Never use anything to cover the ground contact.
- Do not insert objects into air vents.
- Do not connect this system to a dimmerpack.
- Do not switch the system on and off in short intervals, as this would reduce the system's life.
- Do not open this device. Risk: hazardous radiation exposure.
- Do not run the output of any amplifier channel, back into another channel's input.
- Do not connect (parallel or series) an amplifier output with any other amplifier output.
- Only use system indoor, avoid contact with water or other liquids.
- Avoid flames and do not put close to flammable liquids or gases.
- Always disconnect power from the mains, when system is not used. Only handle the power-cord by the plug. Never pull out the plug by tugging the power-cord.
- Make sure you don't use the wrong kind of cables or defective cables.
- Make sure that the signals into the mixer are balanced, otherwise hum could be created.
- Make sure you use DI boxes to balance unbalanced signals; All incoming signals should be clear.
- Make sure that the available voltage is not higher than stated on the rear panel.

- Make sure that the power-cord is never crimped or damaged. Check the system and the power-cord from time to time.
- Always operate the unit with the AC ground wire connected to the electrical system ground.
- Connecting amplifier outputs to oscilloscopes or other test equipment, while the amplifier is in bridged mode, may damage both the amplifier and test equipment.
- Do not drive the inputs with a signal level bigger, than required to drive the equipment to full output.
- In system setup, the amplifier's output power must be 50%-100% more than the loaded loudspeakers rated power.
- Please turn off the power switch, when changing the power cord or signal cable, or select the input mode switch.
- In typical use, Please set the volume to 0dB position.
- Sometimes, when you want to send one signal to more than one amplifier, you should use a signal distributor.
- Extreme frequency boosts in connection with a high input signal level may lead to overdriving your equipment. Should this occur, it is necessary to reduce the input signal level by using the INPUT control.
- To emphasize a frequency range, you don’t necessarily have to move its respective sliding control upward; try lowering surrounding frequency ranges instead. This way, you avoid causing the next piece of equipment in your sound path to overdrive. You also preserve valuable dynamic reserve (“headroom”)
- For replacement use fuses of same type and rating only.
- Prevent distortion! Make sure that all components connected to the DSP-2448 MKII have sufficient power ratings. Otherwise distortion will be generated because the components are operated at their limits.
- Avoid ground loops! Always be sure to connect the power amps and the mixing console to the same electrical circuit to ensure the same phase!
- If system is dropped or struck, disconnect mains power supply immediately. Have a qualified engineer inspect for safety before operating.
- If the system has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your system. Leave the system switched off until it has reached room temperature.
- Repairs, servicing and electric connection must be carried out by a qualified technician.
- WARRANTY: Till one year after date of purchase.

OPERATING DETERMINATIONS

If this system is operated in any other way, than the one described in this manual, the product may suffer damages and the warranty becomes void.
Any other operation may lead to dangers like short-circuit, burns, electric shock, etc.

You endanger your own safety and the safety of others!

Improper installation can cause serious damage to people and property !

Description of the device

Features

The DSP-2448 MKII is a professional Digital Effect Processor:
• 48 pre-programmed (P1-P48) and 48 programmable effects (U1-U48).
• 768 effect settings
• 3-band parametric Equalizer
• 48 kHz Sampling rate
• 24-bit Sigma-Delta, 64/128 times oversampling
• Connection via balanced XLR-sockets or jacks
• Total real-time MIDI control
• 16 x 2 backlight LCD Display

Overview

Fig. 1

1) LCD Display
2) Jog-wheel: For adjusting the parameters. Turning the jog-wheel to the right increases the parameter value, turning to the left decreases the value.
3) Program-Button
4) Lock-Button
5) Bypass-Button
Bypass allows you to instantly compare the original sound.
6) Parameter-Button
7) EQ / Reset-Button
8) Store / MIDI-Button
9) Power Switch-Button

Fig. 2

DSP-2448 MKII DESCRIPTION REAR PANEL:

10) IEC Connector + Fuse
11) AC Voltage Selector 115V/230V
12) Midi Out
13) Midi Thru
14) Midi In
15) XLR Output 2
16) TRS Output 2
17) Input Level –20dB / + 4dB
18) TRS Input 2
19) XLR Input 2
20) TRS Output 1
21) XLR Output 1
22) Input Level –20dB / + 4dB
23) TRS Input 1
24) XLR Input 1

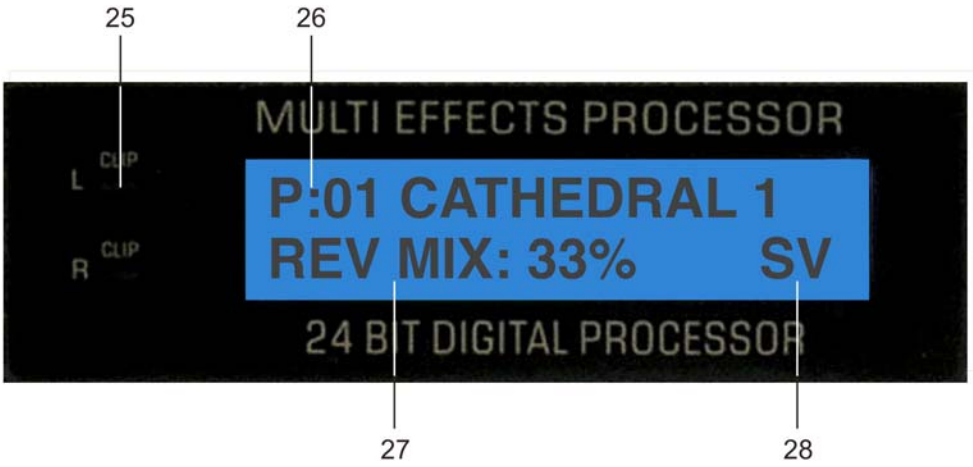


Fig. 3

25) Clip LED: for Left / Right Input / Output indication
26) Program: You can select between P1 – P48.
27) Parameters: Adjust each parameter
28) SV: This reminds the user that the editable parameters are ready to be saved and stored in the memory, by blinking slowly every second. Press the STORE-button twice and the SV indication in the display will disappear. The display will show:

Installation

Remove all packing materials from the DSP-2448 MKII. Check that all foam and plastic padding is removed. Screw the equipment into a 19" rack. Connect all cables.
Always disconnect from electric mains power supply before cleaning or servicing.
Damages caused by non-observance are not subject to warranty.

Set Up and Operation

Before plugging the unit in, always make sure that the power supply matches the product specification voltage. Do not attempt to operate a 120V specification product on 240V power, or vice versa.
Install this device on a flat surface, not bending or curved.
Do not supply power before all components of the system are set up and connected properly.

Menu Functions

Press the PROG-Button (**3**) to select a program and the LCD screen will display the program effect.

In the display the "**:**" symbol is blinking, to indicate you can change the program from P1-P48.
Press the PROG-Button (**3**) again to select USER PROGRAM EFFECT.
You can now select any program memory from U1-U48 by turning the jog-wheel.

Parameters

Press the PARAM-Button (**6**) to edit the present parameter shown in the display. If the "**:**" symbol is blinking, you can adjust a parameter by using the jog-wheel (**2**). When you keep pressing this button, you are able to select different parameters. SV keeps blinking in the top right corner of the display, meaning the parameter has been edited and reminding the user to save his changes or not. Press the STORE-Button (**8**) to save the edited value.
Example: If you want to edit all the P02 parameter values.

Press the PARAM-Button (**6**) and the display shows REV MIX: 50%. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to increase REV MIX: 50% to REV MIX: 70%.
Press the PARAM-Button (**6**) again, the display will show REV TIME: 7.0s. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to decrease the value from 7.0s to 6.8s.
Press the PARAM-Button (**6**) again, the display will show REV H FREQ. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to increase/decrease the parameter values.
Press the PARAM-Button (**6**) again, the display will show REV L FREQ. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to increase/decrease the parameter values.
Press the PARAM-Button (**6**) again, the display will show REV DENS. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to increase/decrease the parameter values.
Press the PARAM-Button (**6**) again, the display will show RV LPF. In the display the "**:**" symbol is blinking, to indicate you can use the jog-wheel to increase/decrease the parameter values.

Lock
First hold the LOCK-button (**4**) for a few seconds, the display will show "**ö**". The device is now in Lock-mode and you cannot alter any values.

Press and hold the LOCK-button (**4**) again to disable the Lock function. The device returns to its original function.

Equalizer
Press the EQ / RESET-button (**7**) to activate Parametric EQ octave, the display will also show the Frequency & Gain.

If the "**:**" symbol is blinking, you can adjust the EQ.
You can select: LOW BAND EQ, MID BAND EQ or HIGH BAND EQ, using the jog-wheel.
Press the EQ / RESET-button (**7**) again. The "**F**" in the display will start blinking, meaning you are able to adjust Frequencies between 250Hz-16KHz by using the jog-wheel.
Press the EQ / RESET-button (**7**) again. Now you are able to adjust the Gain between –12dB to +12dB. If you press EQ / RESET-button (**7**) again, you return to the EQ adjustment. If you hold the button for more than 3 seconds you will RESET the present program and it will be reset to the factory default settings.

Effect Off/ Bypass
Press the Bypass-button (**5**) to disable the sound effect. The display shows:

If you press this button again, the sound effect program is enabled. When the Bypass-button (**5**) is held longer, the input signal will directly be sent to the output..

Hold this button again for a longer period to resume to program function.

Store
Press the STORE-button (**8**) to save the edited parameter values. You are able to STORE any user program between U01-U48. If U01 blinks, SV blinks, indicating the user is able to select any user program from U01-U48 with the jog-wheel (**2**).

Press the STORE-button (**8**) again and the program will be stored. The display will show STORE OK!
If you go back to the USER PROGRAM Mode you will see that the previous changes have been SAVED.

Bypass & Store
Press the BYPASS & STORE-buttons (**5**+**8**) together to enter the MIDI program function. The LCD display will show:

In the MIDI channel mode you are able to select Channel 1-16 or OFF.

If you press the BYPASS-button (**5**) again, you are able to select four types of programs (P0, P1, P2, P3).

Press the PROGRAM-button (**3**) to enter MIDI communication. You may have MIDI control now. Press the BYPASS-button (**5**) again to exit the MIDI program. The settings will **not** be stored.

Communication between 2 units or more
Set the first DSP-2448 MKII to MIDI: PROGRAM 3. Then press the PROGRAM-button (**3**). Now you are able to control another DSP. Remember that the setting must be exactly the same and the MIDI IN & MIDI OUT have to be connected. Turn the jog-wheel of the first DSP (connected from the MIDI OUT to the MIDI IN of the second device) to control the programs from P1-P48 or U1-U48 of the other DSP-2448 MKII connecting to MIDI IN.

MIDI Control

Press the BYPASS & STORE buttons (**5**+**8**) to enable MIDI control mode. All parameters can be edited with the jog-wheel (**2**) & BYPASS-button (**5**).
MIDI control allows you to select: a MIDI channel
Configure the controller.

If you press the BYPASS-button (**5**) once, you can select the MIDI channel.
The display reads CH-XX. By turning the jog-wheel (**2**), you are able to select a channel from 1-16 or OFF.
To switch off the MIDI function, simply select OFF.

If you press the BYPASS-button (**5**) twice, you can configure the controller commands.
There are 4 controller modes:

Display	Mode
Program 0	Program changes are not transmitted
Program 1	Program changes are received but not transmitted
Program 2	Program changes are transmitted but not received
Program 3	Program changes are transmitted and received

Using DSP-2448 MKII in the AUX Bus

By connecting the DSP 2448 MKII to an AUX bus of your mixing console, you can control the amount of signal sent to the effect processor with the AUX control, independent of the channel fader.
Example, various drum sounds: while a lot of reverb is applied to the snare drum, the effect intensity could be reduced in the channels assigned to the toms. To use the DSP in the AUX-bus, the unit must be wired as followed:

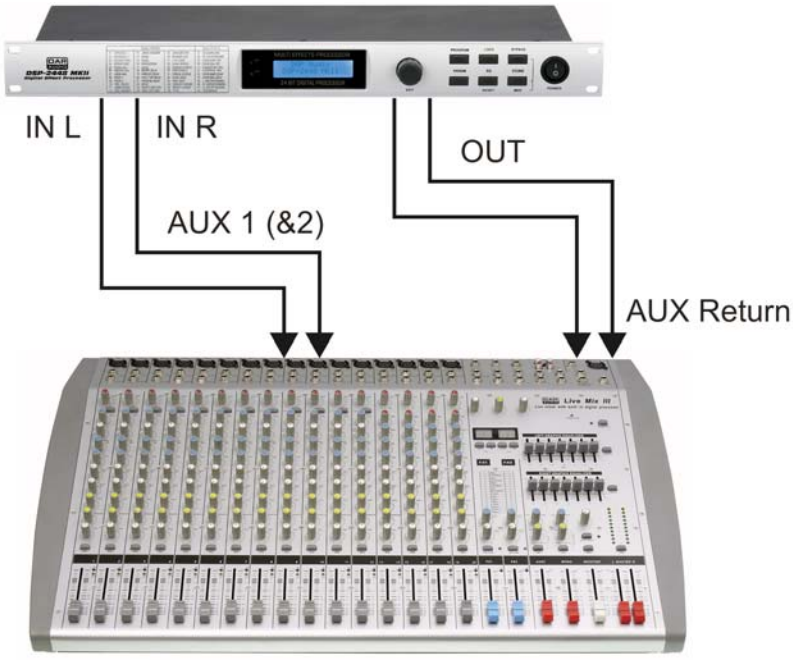


Fig. 4

Using the DSP 2448 MKII in a MIDI system

With its built-in MIDI interface the DSP can be integrated into any MIDI system. It transmits and receives both program changes via MIDI from a sequencer or any other MIDI device.

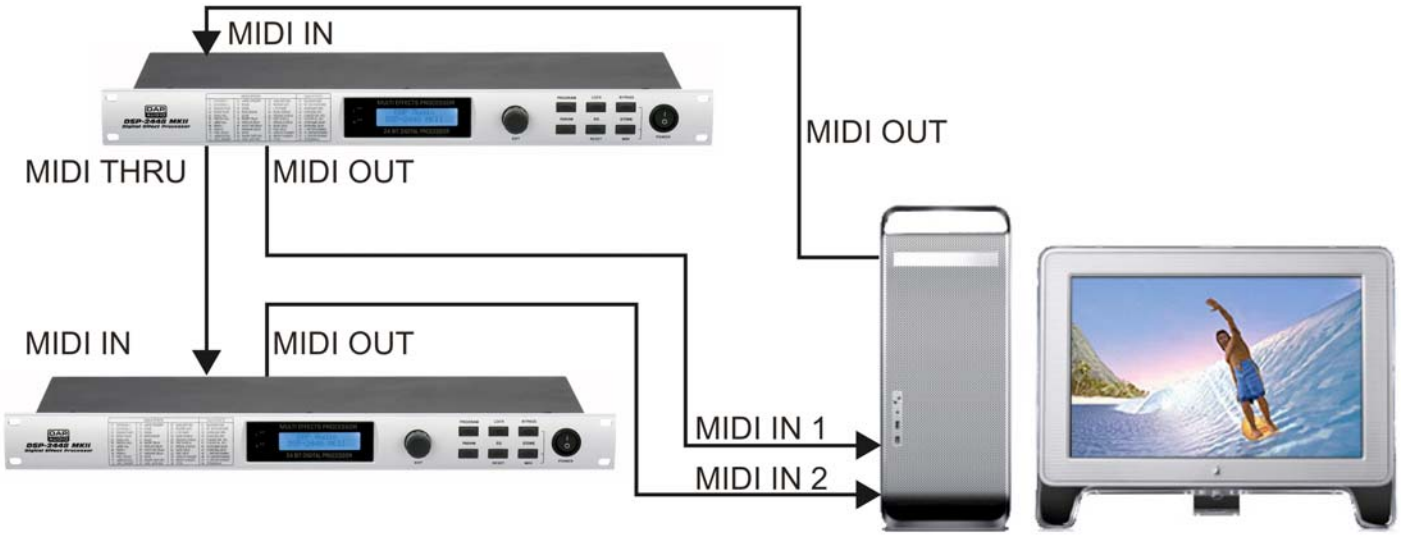


Fig. 5

Effect Lists

Effect Mode	Name
01	Cathedral 1
02	Cathedral 2
03	Medium Plate
04	Bright Plate
05	Small Hall
06	Medium Hall
07	Large Hall
08	Room 1
09	Room 2
10	Medium Studio
11	Large Studio
12	Medium Concert
13	Large Concert
14	Stage
15	Vocal
16	Percussion
17	Delay
18	Short Delay
19	Medium Delay
20	Multi Tap Delay
21	Panning Delay
22	Echo
23	Short Gate Rev.
24	Medium Gate Rev.
25	Long Gate Rev.
26	Reverse Gate
27	L to R Gate
28	Slow Chorus
29	Medium Chorus
30	Fast Chorus
31	Special Chorus
32	Slow Leslie
33	Fast Leslie
34	Medium Flanger
35	Bright Flanger
36	Pitch
37	Delay & Reverb
38	Re. Delay & Reverb
39	Chorus & M. Rev.
40	Chorus & L. Rev.
41	Flanger & M. Rev.
42	Flanger & L. Rev.
43	Chorus & M. Delay
44	Chorus & L. Delay
45	L. Disortion & Rev.
46	M. Disortion & Rev.
47	H. Disortion & Rev.
48	Pitch & Delay

Preset Values

	NAME	MIX	TIME (s)	H FREQ	L FREQ	DENS	LPF
01	Cathedral 1	33	7	91	0	37	91
02	Cathedral 2	33	7	73	0	37	91
03	Medium Plate	33	1.9	73	0	37	91
04	Bright Plate	33	2.6	73	0	37	91
05	Small Hall	33	2.4	91	0	37	91
06	Medium Hall	33	2.7	91	0	37	91
07	Large Hall	33	7.8	91	0	37	91
08	Room 1	37	2.7	91	0	37	91
09	Room 2	37	4.7	69	0	37	91
10	Medium Studio	20	2.4	75	0	100	91
11	Large Studio	20	4.6	75	0	100	91
12	Medium Concert	20	2.7	87	0	100	91
13	Large Concert	20	6.2	87	0	100	91
14	Stage	20	2.7	75	0	100	91
15	Vocal	20	2.6	87	0	100	91
16	Percussion	20	5.4	87	0	100	91

	NAME	MIX	TIME (s)	FB
17	Delay	45	560	26
18	Short Delay	45	70	0
19	Medium Delay	45	470	0
20	Multi Tap Delay	45	380	16
21	Panning Delay	45	1000	0
22	Echo	45	690	13

	NAME	MIX	TIME (s)	DENS	LPF
23	Short Gate Rev.	37	130	24	85
24	Medium Gate Rev.	18	860	37	85
25	Long Gate Rev.	18	1000	37	85
26	Reverse Gate	18	460	37	85
27	L to R Gate	73	1000	37	85

	NAME	MIX	Left Coar	Right Coar	L FUNE	R FUNE	DEL TIME (ms)	DEL FB)
36	Pitch	100	-12	+12	0	0	10	0
48	Pitch & Delay	100	-12	+12	0	0	380	21

	NAME	MIX	DEL (ms)	DEPTH	FB	NAME
28	Slow Chorus	61	16	29	14	12
29	Medium Chorus	61	16	45	8	0
30	Fast Chorus	61	8	16	26	0
31	Special Chorus	61	74	100	2	37
32	Slow Leslie	45	24	45	8	20
33	Fast Leslie	33	24	4	81	20
34	Medium Flanger	61	24	27	4	85
35	Bright Flanger	77	32	53	6	77
43	Chorus & M. Delay	61	74	69	6	29
44	Chorus & L. Delay	61	100	29	12	45

	NAME	REV MIX	REV TIME (S)	REV H FREQ	REV DENS	REV L FREQ	REV LPF	DEL MIX	DEL TIME (ms)	DEL FB
37	Delay & Reverb	45	1.1	91	0	37	0	45	1000	0
38	Re. Delay & Reverb	0	4.6	10	91	0	0	9	460	100

	NAME	REV MIX	REV TIME (S)	REV H FREQ	REV L FREQ	REV DENS	REV LPF	CHO MIX	CHO DEL	CHO DEPTH	CHO RATE	CHO FB
39	Chorus & M. Rev.	8	2.1	24	24	75	0	12	18	61	16	69
40	Chorus & L. Rev.	20	.1	24	33	75	0	12	18	61	20	16

	NAME	REV MIX	REV TIME (S)	REV H FREQ	REV L FREQ	REV DENS	REV LPF	FLG MIX	FLG DEL	FLG DEPTH	FLG RATE	FLG FB
41	Flanger & M. Rev.	45	2.5	75	0	0	91	61	24	24	8	24
42	Flanger & L. Rev.	45	3.4	75	0	0	91	77	32	53	6	37

	NAME	REV MIX	REV TIME (S)	REV H FREQ	REV L FREQ	REV DENS	REV LPF	DIST DEPTH	DIST LPF
45	L. Disortion & Rev.	20	2.1	37	6	24	69	10	45
46	M. Disortion & Rev.	20	2.1	37	6	24	69	37	45
46	H. Disortion & Rev.	20	3.4	87	6	24	69	100	37

1. Reverb parameter

MIX:	Reverb effecting-mixing level
TIME:	Reverberation time
H FREQ REV:	High Frequency Reverberation ratio
L FREQ REV:	Low Frequency Reverberation ratio
DENS:	Reverb Density
PFL:	Pre Low-pass filter

2. Delay Group parameter

MIX:	Delay mixing level
TIME:	Delay Time
FB:	Feedback

3. Chorus / Flanger parameters

MIX:	Chorus / Flanger mixing level
DEL:	Chorus / Flanger Delay Time
DEPTH:	Chorus / Flanger Depth
RATE:	Chorus / Flanger Rate
FB:	Chorus / Flanger Feedback

4. Noise / Gate parameters

GATE MIX:	Noise / Gate mixing level
GATE TIME:	Noise / Gate Time
GATE DENS:	Noise / Gate Density
GATE LPF:	Noise / Gate Pre Low-pass filter

5. Pitch parameters

PITCH MIX:	Pitch mixing level
L COARSE:	Left channel detune
R COARSE:	Right channel detune
L FINE TN:	Left channel fine tuning
R FINE TN:	Right channel fine tuning
DEL TIME:	Delay Time
DEL FB:	Delay Feedback

6. Distortion parameters

DISTORTION ON:	On / Off Distortion select
DIST DEPTH:	Distortion Depth
DIST LPF:	Distortion Low-pass filter

7. Delay + Reverb
8.Chorus + Reverb
9. Flanger + Reverb
10. Chorus + Delay
11. Distortion + Reverb
12. Pitch + Delay etc combine effect parameters

MIDI Implementation Chart

MIDI IMPLEMENTATION CHART DSP-2448				
Function		**Transmitted**	**Recognized**	**Remarks**
Basic channel	Default Changed	OFF 1-16	OFF 1-16	
Mode	Default Messages Altered	 X	 X	
Note number	 True voice	X X	X X	
Velocity	Note ON Note OFF	X X	X X	
After touch	Key's Channel	X O 0-47	X O 0-47	 Selects U01-U48
Pitch bend		X	X	
Control change		X	X	
Prog Change		O 0-47	O 0-47	 Selects P01-P48
SysEx		X	X	
Common	Song pos Song Sel Tune	X X X	X X X	
System real time	Clock Commands	X X	X X	
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	X X X X	X X X X	

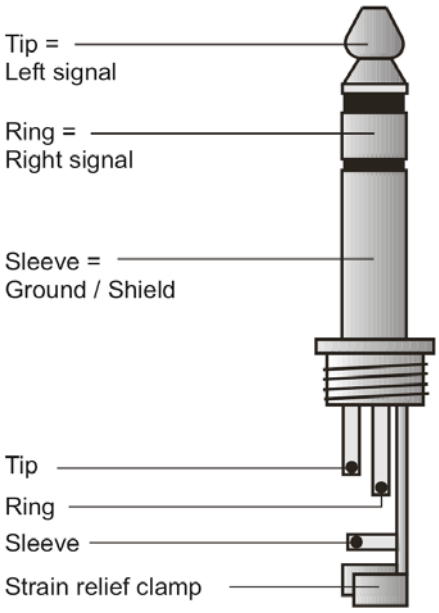
O:YES Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO

X:NO Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO

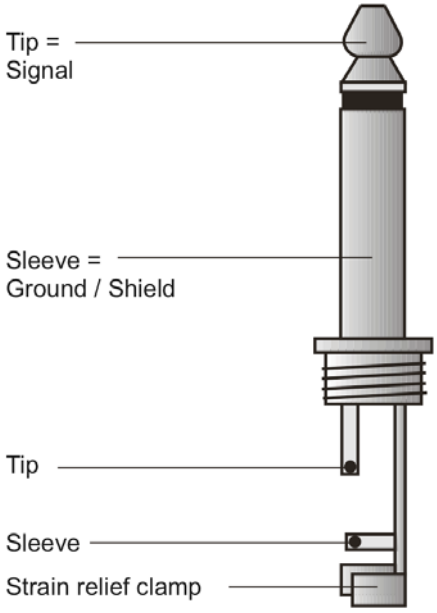
Connection Cables

Take care of the connector cables, always holding them by the connectors and avoiding knots and twists when coiling them: This gives the advantage of increasing their life and reliability, which is always to your advantage.
Periodically check that your cables are in good condition, that they are correctly wired and that all their contacts are perfectly efficient: a great number of problems (faulty contacts, ground hum, discharges, etc.) are caused entirely by using unsuitable or faulty cables.

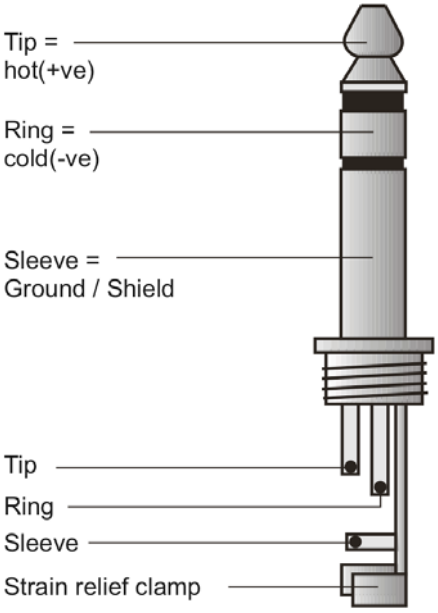
Headphones

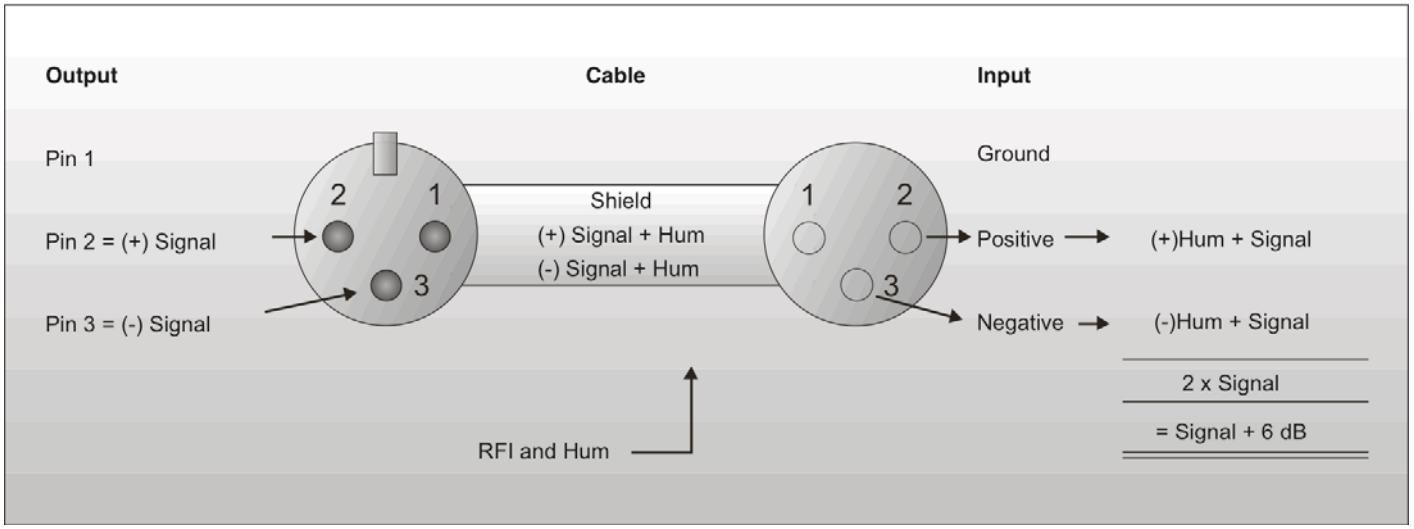


Unbalanced mono 1/4” jack plug

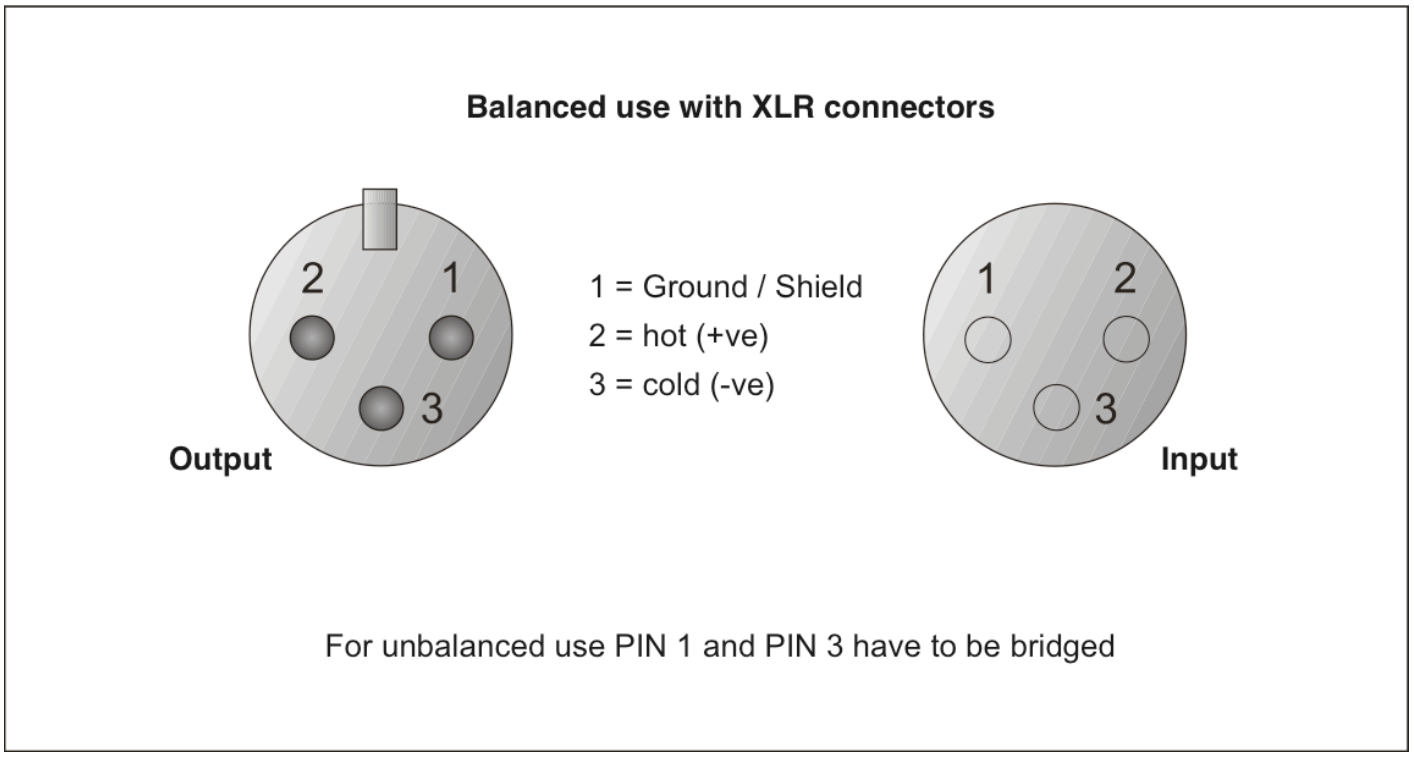


Balanced mono 1/4” jack plug





Compensation of interference with balanced connections



Maintenance

The DSP-2448 MKII equalizer requires almost no maintenance. However, you should keep the unit clean. Disconnect the mains power supply, and then wipe the cover with a damp cloth. Do not immerse in liquid. Keep connections clean. Disconnect electric power, and then wipe the audio connections with a damp cloth. Make sure connections are thoroughly dry before linking equipment or supplying electric power.

Replacing a Fuse

Power surges, short-circuit or inappropriate electrical power supply may cause a fuse to burn out. If the fuse burns out, the product will not function whatsoever. If this happens, follow the directions below to do so.

1. Unplug the unit from electric power source.
2. Insert a flat-head screwdriver into a slot in the fuse cover. Gently pry up the fuse cover.
3. Remove the used fuse. If brown or unclear, it is burned out.
4. Insert the replacement fuse into the holder where the old fuse was. Reinsert the fuse cover. Be sure to use a fuse of the same type and specification. See the product specification label for details.

Troubleshooting

Dap Audio DSP-2448 MKII

This troubleshooting guide is meant to help solve simple problems.
If a problem occurs, carry out the steps below in sequence until a solution is found. Once the unit operates properly, do not carry out following steps.

1. If the device does not operate properly, unplug the device.
2. Check the power from the wall, all cables etc.
3. If all of the above appears to be O.K., plug the unit in again.
4. If you are unable to determine the cause of the problem, do not open the equalizer, as this may damage the unit and the warranty will become void.
5. Return the equalizer to your Dap Audio dealer.

Product Specifications

Model: DAP Audio DSP-2448 MKII
Power supply: 230 VAC, 50 Hz
Power consumption: 10 W

Analog Inputs
Connectors: XLR or balanced 1/4" jack
Type: RF filtered, servo balanced, 20 KOhm unbalanced
Input Impedance: 40 KOhm balanced, 20 KOhm unbalanced
Nominal Operating Level: -20 dB to +4 dB
Max. Input level: +16 dB at +4 dB nominal level, +2 dB at -20 dB nominal level

Analog Outputs
Connectors: XLR or balanced 1/4" jack
Type: Electronically servo-balanced output stage
Output impedance: 66Ω balanced, 33Ω unbalanced
Max. Output level: +16 dB at +4 dB nominal level, +2 dB at -20 dB nominal level

System Specifications
Frequency Response: 20Hz to 20KHz, ±1dB
Crosstalk: -95 dB, 20 Hz to 20 KHz
S/N: 98 dB, A weighted, 20 Hz to 20 KHz
THD: <0.065%, @1KHz, 0dB

MIDI Interface
Type: 5-Pin-DIN-Socket IN / OUT / THRU

Digital Processing
Converters: 24-bit Sigma-Delta, 64/128-times over-sampling
Sampling Rate: 48KHz

Display: 2x16LCD Display
Dimensions: 482 x 152 x 45 mm (LxWxH)
Weight: 3 kg

Design and product specifications are subject to change without prior notice.

CE

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